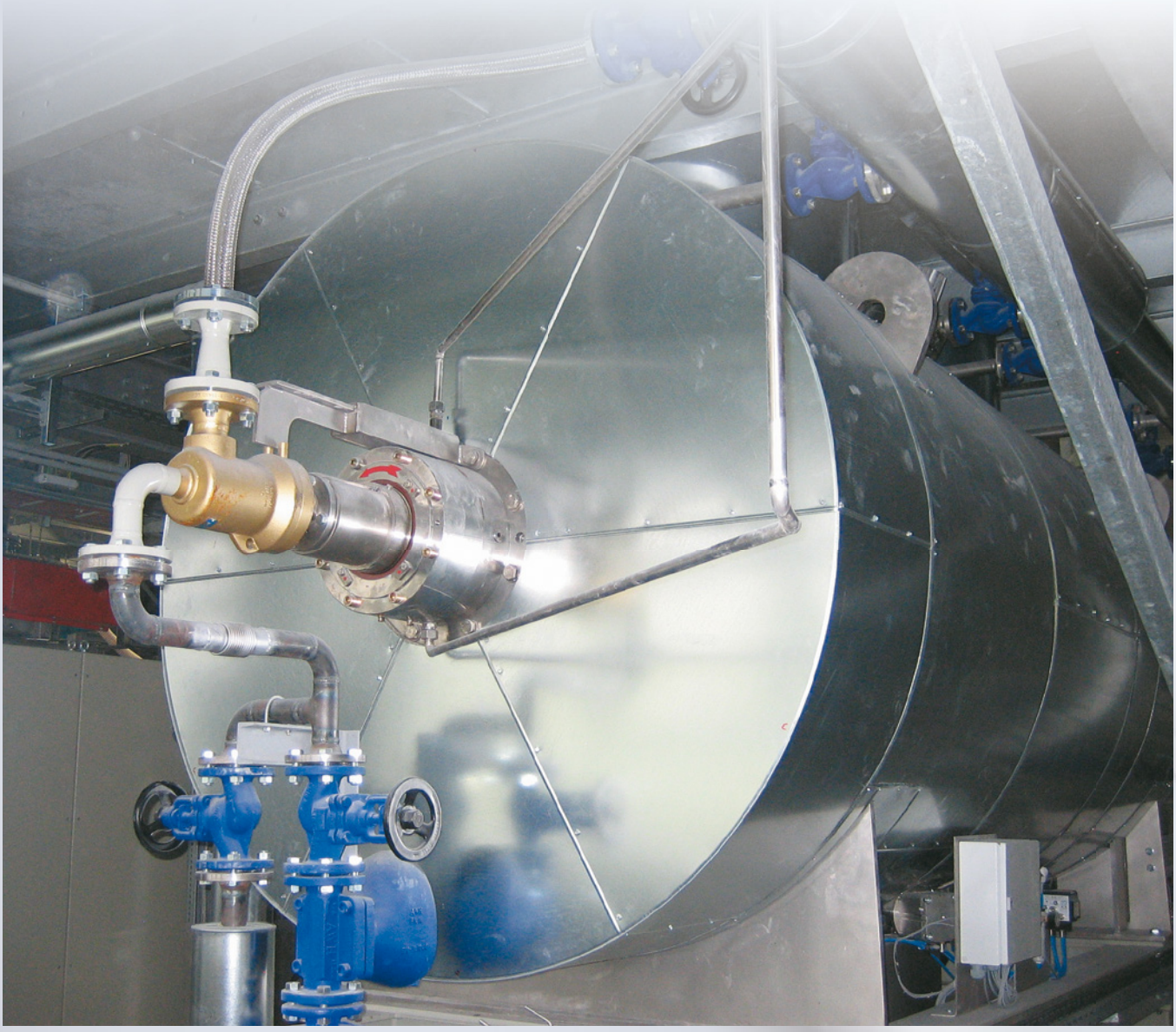
Sealing solution for high pressure paddle dryer

EagleBurgmann
Rely on excellence

# HSMR35 mechanical seal

Information **EN07081**



In the silica production plant of CWK (Chemiewerk Bad Köstritz, Germany) two paddle dryers from DVA are in operation. Silica gels resp. soles are used in the manufacturing of catalysts, paints and varnishes, cosmetics, pharmaceuticals, as filler for plastics and in the beverage and paper industry.

## Design data of the paddle dryers

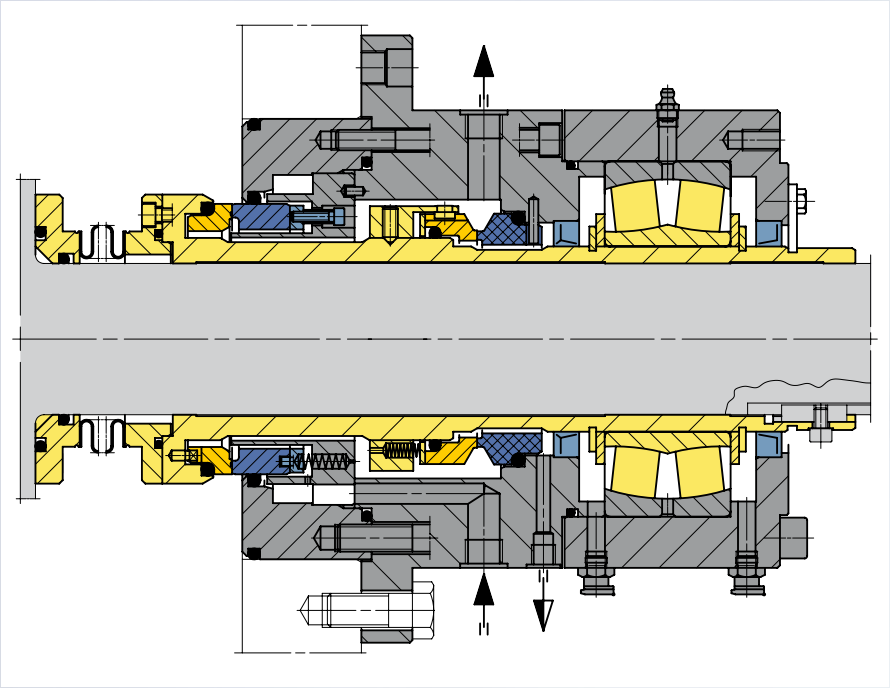
Design temperature: up to 160 °C resp. up to 220 °C
Design pressure: Vacuum ... 5 bar resp. vacuum ... 20 bar

**EagleBurgmann Germany GmbH & Co KG**
Aeussere Sauerlacher Strasse 6-10
D-82515 Wolfratshausen / Germany

Phone +49 8171 23 0
Fax +49 8171 23 1214

info@eagleburgmann.com
www.eagleburgmann.com

EN07081 / E1 / 11.10 / 1.000 / 9.7.5 



HSMR35HAL-D/190-E7

## Equipment with seal and supply system

Equipment: Horizontal paddle dryers with side entry, between bearings
Manufacturer: DVA (Deutsche Vakuumapparate Holland-Merten GmbH) in Roßla, Germany
Seals incl. materials up to 5 bar operating pressure:
Fixed bearing side: HSMR35L-D/180-E13, Q2Q2K/M5GE (1.4301)-Q2BM1/M5GE (1.4122)
Floating bearing side: HSMR35AL-D/180-E6, Q2Q2K/M5GE (1.4301)-Q2BM1/M5GE (1.4122)
Seals incl. materials up to 20 bar operating pressure:
Fixed bearing side: HSMR35HL-D/190-E7, Q2Q2KAGE (1.4571/1.4301)-Q2BVGE (1.4122)
Floating bearing side: HSMR35HAL-D/190-E7, Q2Q2KAGE (1.4571/1.4301)-Q2BVGE (1.4122)
Supply system: TS 1016/A007 with cooling coil, circulation pump SPU 5000-00 and refill pump
Monitoring: Level switch (SPS 2000-00), contact pressure gauge, PT 100 thermo sensor to measure the temperature of the supply medium
Supply medium: Water-glycol mixture
Barrier pressure: 22 bar
Mode of operation: API 682 plan 53
ATEX: Ex-Zone 0 means II 1/2 GD cb 156 °C (T3), temperature class 3

## Solution from EagleBurgmann

The sealing of paddle dryers poses always a challenge for the sealing technology. Paddle dryers are mainly used in horizontal arrangement where the seal is partially in direct contact with the product. That means that on the one hand the product itself and on the other hand the gas phase has to be sealed. Therefore mainly dual seals are used with pressurized barrier medium in these demanding applications.

Beyond this, the requirements of the explosion safety regulation resp. the directive 94/9/EG (ATEX 95) have to be considered in most cases. One more characteristic is the thermal expansion of the heated shaft which has to be compensated by the seal.

In this specific application also the high pressure of 20 bar is an additional challenge.

The paddle dryer from DVA (Deutsche Vakuumapparate) is the first one which is designed for such a high pressure. EagleBurgmann developed a seal in close cooperation with DVA which meets the aforementioned requirements to the full extent.

## Technical features of the HSMR35(H)(A)L-D at a glance:

- Cartridge unit with integrated bearing
- Bellows at the floating bearing side to compensate the heat expansion of the shaft
- Balanced seal at atmospheric side where the max. design pressure is 20 bar
- Precise drain-off of any leakage in order to fulfill the requirements of the TA-Luft air quality control directive.
- Surfaces which are in contact to the medium are designed fine finished, to avoid deposits
- High service life times due to stationary seal design and HD-grooves at product side
- Maximum security of the production plant due to ATEX Zone 0 conformity and monitoring of the supply medium temperature